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Patent
Docket No. G61-029 US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Sten Edstrom
Application No. : 10/517,932
Filing Date : May 26, 2005
For : A Method For Sealing and/or Reconditioning of Pipes
Examiner : James F. Hook
Art Unit : 3754
Confirmation No. : 6877

8 Pages

Via Fax: 571-273-4903

Attn: Examiner Hook

Commissioner for Patents

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PROPOSED AMENDMENT - PLEASE DO NOT ENTER

Dear Examiner Hook:

Please consider the following claims for discussion only:

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IN THE CLAIMS:

Claim 1 (currently amended): A method for sealing of a pipe (4) that is inaccessible from the outside due to its location inside building elements or, that is in the ground, and in which a fluid coating material is sprayed out of at least one nozzle (2) moved through the pipe to be sealed, towards the inner wall (3) of the pipe for covering at least parts of the inner wall of the pipe thereof, and in which the coating material then hardens for forming a part of the wall of the pipe where it has been applied, and wherein the method is for sealing of pipes having one or more substantial holes (12) through the pipe wall, the method comprising:

introducing into the pipe to be sealed, prior to said spraying, at least one unperforated material piece (10) that is divided in the longitudinal direction thereof and held together by means (11) for holding the unperforated material piece (10) together to a form pipe piece (17, 17') with a smaller outer diameter than the inner diameter of the pipe, to a location of a substantial hole through the pipe wall for covering the hole;

after introducing the pipe piece (17, 17') into the pipe, to the location of the substantial hole through the pipe, then braking the means for holding the unperforated material piece together so that the pipe piece increases in [[the]] diameter thereof while releasing potential energy in the unperforated material piece ~~and will under pretension~~ bears to bear against the inner wall of the pipe, and wherein the unperforated material piece forming the pipe piece has no ability to seal said hole alone, but it forms in the subsequent spraying of the coating material an auxiliary wall in the same pipe as that in which the nozzle is located over the hole for retaining the material sprayed within the pipe, said material piece being introduced into the same pipe as that in which the nozzle is

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located, and said sprayed coating material being retained within the pipe in which the material piece is located; and

after braking the means for holding the unperforated material piece together, using the nozzle (2) to spray the fluid coating material onto an inner surface of the pipe piece (17, 17') and onto the inner wall (3) of the pipe (4) adjacent the pipe piece not covered by the pipe piece, to form a coating material layer (8) on the inner surface of the pipe piece (17, 17') and the adjacent inner wall for sealing the auxiliary wall and the substantial hole (12) at said location.

Claim 2 (previously presented): A method according to claim 1, including introducing a camera into the pipe together with the pipe piece and that the location in which the means holding the pipe piece (17, 17') together under pretension is to be broken is determined on the basis of images of the interior of the pipe displayed by the camera.

Claim 3 (previously presented): A method according to claim 1, characterized in that a bellow-like member (15) expandable through supply of a pressurized medium is brought to expand inside said pipe piece (17, 17') when reaching said location for the substantial hole (12) for breaking said means (11) for holding it together.

Claim 4 (previously presented): A method according to claim 3, characterized in that it is a bellowlike member (15) in the form of a rubber bellow that is brought to expand through supply of compressed air thereto.

Claim 5 (currently amended): ~~A method according to claim 3, characterized in that~~

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said pipe piece (17, 17') A method for sealing of a pipe (4) that is inaccessible from the outside due to its location inside building elements or, that is in the ground, and in which a fluid coating material is sprayed out of at least one nozzle (2) moved through the pipe to be sealed, towards the inner wall (3) of the pipe for covering at least parts of the inner wall of the pipe thereof, and in which the coating material then hardens for forming a part of the wall of the pipe where it has been applied, and wherein the method is for sealing of pipes having one or more substantial holes (12) though the pipe wall, the method comprising:

providing at least one unperforated material piece (10) that is divided in the longitudinal direction thereof and held together by means (11) for holding the unperforated material piece (10) together to a form pipe piece (17, 17') with a smaller outer diameter than the inner diameter of the pipe;

partly expanding a bellow-like member (15) through a supply of a pressurized medium, inside the pipe piece (17, 17') for holding the pipe piece;

moving the bellow-like member (15) is moved inside the pipe towards said location while holding it through a the bellow-like member (15) located thereinside and partially expanded, said member being brought to expand further when reaching said location is holding the pipe piece (17, 17') for introducing the pipe piece (17, 17') to the location of the substantial hole through the pipe wall for covering the hole;

further expanding the bellow-like member (15) at the location for braking the means for holding the unperforated material piece together so that the pipe piece increases in diameter while releasing potential energy in the unperforated material piece to bear against the inner wall of the pipe, and wherein the unperforated material piece forming the pipe piece has no ability to seal said hole alone, but it forms in the subsequent spraying of the coating material an auxiliary wall in the same pipe as that in which the nozzle is located

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over the hole for retaining the material sprayed within the pipe, said material piece being introduced into the same pipe as that in which the nozzle is located, and said sprayed coating material being retained within the pipe in which the material piece is located; and after braking the means for holding the unperforated material piece together, using the nozzle (2) to spray the fluid coating material onto an inner surface of the pipe piece (17, 17') and onto the inner wall (3) of the pipe (4) adjacent the pipe piece not covered by the pipe piece, to form a coating material layer (8) on the inner surface of the pipe piece (17, 17') and the adjacent inner wall for sealing the auxiliary wall and substantial hole (12) at said location.

Claim 6 (previously presented): A method according to claim 5, characterized in that said pipe piece (17, 17') having a material thickness being less than half the thickness of the wall of the pipe is introduced into the pipe to said location.

Claim 7 (previously presented): A method according to claim 1, characterized in that said pipe piece (17, 17') having a material thickness of 0.2-3 mm is introduced into the pipe to said location.

Claim 8 (previously presented): A method according to claim 7, characterized in that it is said pipe piece (17, 17') made of glass fibre reinforced polyester that is introduced into the pipe to said location.

Claim 9 (previously presented): A method according to claim 8, characterized in that it is said pipe piece (17, 17') made of sheet that is introduced into the pipe to said location.

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Claim 10 (previously presented): A method according to claim 9, characterized in that it is a pipe piece (17), which in a state applied over said substantial hole (12) after breaking said means (11) for holding it together surroundingly covers the inner wall of the pipe, that is used.

Claim 11 (previously presented): A method according to claim 1, characterized in that it is said pipe piece (17'), which in a state applied over a said substantial hole (12) after breaking said means (11) for holding together has a longitudinal gap between the two circumferential ends thereof with a transversal dimension smaller than half the circumference of the pipe that is used for enabling sealing of at least one said substantial hole located opposite to a T-branch of the pipe.

Claim 12 (previously presented): A method according to claim 11, characterized in that it is one or more ribbons (11) of an easily breakable material that hold the pipe piece (17, 17') together when moving it to said location.

Claim 13 (previously presented): A method according to claim 12, characterized in that it is a coating material comprising a mixture of polyester and a hardening agent, preferably also glass flakes for obtaining a coating consisting of a glass flake reinforced polyester, that is sprayed on the inner wall of the pipe.

Claim 14 (previously presented): A method according to claim 1, wherein the coating material comprises a fire proof mass containing mineral wool that is sprayed on the inner wall of the pipe.

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Claim 15 (previously presented): A method according to claim 14, characterized in that it is carried out for sealing of a waste pipe in a building.

Claim 16 (previously presented): A method according to claim 14, characterized in that it is carried out for sealing of a ventilating pipe in a building.

Claim 17 (previously presented): A method according to claim 1, characterized in that the pipe piece (17, 17') is moved in the pipe to a location for covering a hole (12) having a diameter exceeding 10 mm.

Claim 18 (canceled).

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REMARKS:

Claims 1-17 are in the case and presented for reconsideration.

Respectfully submitted,
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Dated: September 8, 2009

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